wherein unpaired bonding electrons on the surface of the thin film during the cooling solidification are terminated by hydrogen atoms in the hydrogen-containing atmosphere.

12. (Five Times Amended) The method of forming a crystalline film, comprising:

forming a semiconductor thin film having a surface on a glass substrate; and

crystallizing at least a surface layer of the semiconductor thin film by applying energy through a window that exhibits transparency to the energy to the surface of the semiconductor thin film, wherein a distance between the window and the thin film is more than about 20 mm, and at least the surface layer of the semiconductor thin film is melted by the applied energy and crystallized by cooling solidification under an atmosphere containing a gas containing the component element of the semiconductor thin film and hydrogen,

wherein unpaired bonding electrons on the surface of the semiconductor thin film during the cooling solidification are terminated by hydrogen atoms in the atmosphere.

19. (Amended) A high energy supply apparatus for use with an object material, comprising:

a generation source that generates high energy; and

a supply chamber that supplies high energy to the object material, wherein:

the object material is disposed in the supply chamber;

the supply chamber includes an introduction window that exhibits transparency to the energy and introduces high energy into the supply chamber; and

the introduction window is disposed at a location resistant to adherence of components of the object material to the introduction window when the high energy is supplied to the object material such that a distance between the introduction window and the object material is more than about 20 mm.

20. (Six Times Amended) A method of forming a crystalline film, comprising:

forming a thin film on a glass substrate;

setting the thin film in a supply chamber of a high energy supply apparatus including a generation source for generating the high energy and the supply chamber for supplying the high energy to the thin film, the supply chamber including an introduction window that exhibits transparency to the energy and introduces the high energy into the supply chamber;

crystallizing at least a surface layer of the thin film by supplying high energy through the introduction window to the thin film under a hydrogen-containing atmosphere, at least the surface layer of the thin film being melted by the high energy and crystallized by cooling solidification, and unpaired bonding electrons on a surface of the thin film during the cooling solidification being terminated by hydrogen atoms in the hydrogen-containing atmosphere; and

positioning the introduction window relative to the thin film at a location resistant to adherence of components of the thin film when the high energy is supplied to the thin film such that a distance between the introduction window and the thin film is more than about 20 mm.

24. (Amended) A high energy supply apparatus for use with an object material, comprising:

a generation source that generates high energy; and

a supply chamber that supplies high energy to the object material, wherein;

the object material is disposed in the supply chamber;

the supply chamber includes an introduction window that exhibits transparency to the energy and introduces high energy into the supply chamber; and

a distance between the introduction window and the object material is larger than about 20 mm.

25. (Six Times Amended) A method of forming a crystalline film, comprising:

forming a thin film on a glass substrate;

setting the thin film in a supply chamber of a high energy supply apparatus including a generation source for generating the high energy and the supply chamber for supplying the high energy to the thin film, the supply chamber including a wall and an introduction window provided in a portion of the wall, the introduction window introducing the high energy into the chamber;

crystallizing at least a surface layer of the thin film by supplying high energy through the introduction window that exhibits transparency to the energy to the thin film under a hydrogen-containing atmosphere, at least the surface layer of the thin film being melted by the high energy and crystallized by cooling solidification, and unpaired bonding electrons on a surface of the thin film during the cooling solidification being terminated by hydrogen atoms in the hydrogen-containing atmosphere; and

positioning the introduction window relative to the thin film so that a distance between the introduction window and the thin film is larger than about 20 mm.

29. (Amended) A high energy supply apparatus for use with an object material, comprising:

a generation source that generates high energy; and

a supply chamber that supplies high energy to the object material, wherein;

the object material is disposed in the supply chamber;

the supply chamber includes an introduction window that exhibits transparency to the energy and introduces the high energy into the supply chamber, wherein a

distance between the introduction window and the object material is more than about 20 mm; and

the supply chamber has pressure regulating means for permitting the pressure in the vicinity of the introduction window to be higher than the pressure in the vicinity of the object material.

30. (Five Times Amended) A method of forming a crystalline film, comprising:

forming a thin film on a substrate; and

crystallizing at least a surface layer of the thin film by supplying high energy to the thin film under a hydrogen containing atmosphere, at least the surface layer of the thin film is melted by the high energy and crystallized by cooling solidification, and unpaired bonding electrons on a surface of the thin film during the cooling solidification are terminated by hydrogen atoms in the hydrogen-containing atmosphere, wherein:

crystallizing is carried out in a high energy supply apparatus which includes a generation source for generating the high energy and a supply chamber for a supplying the high energy to the thin film;

the thin film is set in the supply chamber;

the supply chamber includes an introduction window that exhibits transparency to the energy and introduces the high energy into the supply chamber, wherein a distance between the introduction window and the thin film is more than about 20 mm; and

the high energy is supplied to the thin film under a pressure in the vicinity of the introduction window that is higher than a pressure in the vicinity of the thin film in the supply chamber.

34. (Amended) A high energy supply apparatus for use with an object material comprising:

a generation source that generates high energy; and

a supply chamber that supplies high energy to the object material, wherein;

the object material is disposed in the supply chamber;

the supply chamber includes an introduction window that exhibits transparency to the energy and introduces the high energy into the supply chamber, wherein a distance between the introduction window and the object material is more than about 20 mm, and an exhaust port for exhausting the supply chamber; and

the supply chamber has pressure regulating means for permitting the pressure in a vicinity of the introduction window to be higher than a pressure in the vicinity of the object material, and the pressure in the vicinity of the object material to be higher than a pressure in the vicinity of the exhaust port.

35. (Five Times Amended) A method of forming a crystalline film, comprising:

forming a thin film on a glass substrate; and

crystallizing at least a surface layer of the thin film by supplying high energy to the thin film under a hydrogen-containing atmosphere, at least the surface layer of the thin film is melted by the high energy and crystallized by cooling solidification, and unpaired bonding electrons on a surface of the thin film during the cooling solidification are terminated by hydrogen atoms in the hydrogen-containing atmosphere, wherein:

crystallizing is carried out in a high energy supply apparatus which includes a generation source for generating the high energy and supply chamber for supplying the high energy to the thin film;

the thin film is set in the supply chamber;

the supply chamber includes an introduction window that that exhibits transparency to the energy and introduces the high energy into the supply chamber, wherein a distance between the introduction window and the thin film is more than about 20 mm, and an exhaust port for exhausting air in the supply chamber; and

the high energy is supplied to the thin film under (i) a pressure in the vicinity of the introduction window that is higher than a pressure in the vicinity of the thin film, and (ii) a pressure in the vicinity of the thin film that is higher than a pressure in a vicinity of the exhaust port in the supply chamber.

39. (Amended) A high energy supply apparatus for use with an object material, comprising:

a generation source that generates high energy; and

a supply chamber that supplies high energy to the object material, wherein;

the object material is disposed in the supply chamber;

the supply chamber includes an introduction window that exhibits transparency to the energy and introduces the high energy into the supply chamber, wherein a distance between the introduction window and the object material is more than about 20 mm;

the object material is irradiated with the high energy introduced into the supply chamber through the introduction window along an irradiation path assumed in the supply chamber;

a part of the high energy enters the object material, and another part is reflected from the object material and travels along a reflection path assumed in the supply chamber;

a gas flow is present in the supply chamber; and

the supply chamber has gas flow regulating means for permitting the gas flow to travel from the introduction window to the object material in substantially the same direction as the irradiation path, and a gas flow from the object material in substantially the same direction as the reflection path.

40. (Five Times Amended) A method of forming a crystalline film, comprising:

forming a thin film on a glass substrate;

crystallizing at least a surface layer of the thin film by supplying high energy to the thin film under a hydrogen-containing atmosphere, at least the surface layer of the thin film is melted by the high energy and crystallized by cooling solidification, and unpaired bonding electrons on a surface of the thin film during the cooling solidification are terminated by hydrogen atoms in the hydrogen-containing atmosphere, wherein:

crystallizing is carried out in a high energy supply apparatus which includes a generation source for generating the high energy and a supply chamber for supplying the high energy to the thin film;

the thin film is set in the supply chamber;

the supply chamber includes an introduction window that exhibits transparency to the energy and introduces the high energy into the supply chamber, wherein a distance between the introduction window and the thin film is more than about 20 mm;

the thin film is irradiated with the high energy introduced into the supply chamber through the introduction window along an irradiation path in the supply chamber;

a part of the high energy enters the thin film, and another part of the high energy is reflected from the thin film along a reflection path in the supply chamber;

a gas flow is present in the supply chamber; and

the high energy is supplied to the thin film with (i) the gas flow from the introduction window to the thin film in approximately the same direction as the irradiation path, and (ii) the gas flow from the thin film in approximately the same direction as the reflection path.

44. (Amended) A high energy supply apparatus for use with an object material, comprising:

a generation source that generates high energy; and

a supply chamber that supplies high energy to the object material, wherein:

the object material is disposed in the supply chamber;

the supply chamber includes an introduction window that exhibits transparency to the energy and introduces the high energy into the supply chamber;

the thin film is irradiated with the high energy which is introduced into the supply chamber through the introduction window along an irradiation path assumed in the supply chamber; and

the introduction window is disposed so that the normal line of the thin film is shifted from the direction of the irradiation path and a distance between the introduction window and the object material is more than about 20 mm.

45. (Amended) A high energy supply apparatus for use with an object material, comprising:

a generation source that generates high energy; and

a supply chamber that supplies high energy to the object material, wherein:

the supply chamber has setting means for setting the thin film therein;

the supply chamber has an introduction window that exhibits transparency to the energy and introduces the high energy into the supply chamber, wherein a distance between the introduction window and the object material is more than about 20 mm;

the thin film is irradiated with the high energy which is introduced into the supply chamber through the introduction window along an irradiation path assumed in the supply chamber; and

the setting means is disposed so that the normal line of the thin film is shifted from the direction of the irradiation path.

46. (Six Times Amended) A method of forming a crystalline film, comprising:

forming a thin film on a glass substrate; and

crystallizing at least a surface layer of the thin film by supplying high energy through an introduction window that exhibits transparency to the energy to the thin film under a hydrogen-containing atmosphere, at least the surface layer of the thin film is melted by the high energy and crystallized by cooling solidification, and unpaired bonding electrons on a surface of the thin film during the cooling solidification are terminated by hydrogen atoms in the hydrogen-containing atmosphere, wherein:

crystallization is carried out in a high energy supply apparatus that includes a generation source for generating the high energy and a supply chamber for supplying the high energy to the thin film;

the thin film is set in the supply chamber;

the supply chamber has the introduction window provided in a portion of the wall of the supply chamber, for introducing the high energy into the supply chamber, wherein a distance between the introduction window and the thin film is more than about 20 mm;

the thin film is irradiated with the high energy introduced into the supply chamber through the introduction window, the high energy passes through the introduction window along an irradiation path and travels along the irradiation path in the supply chamber; and

the high energy is supplied to the thin film with the normal direction of the thin film shifted by an angle from the direction of the irradiation path.

50. (Amended) A high energy supply apparatus for use with an object material, comprising:

a generation source that generates high energy; and

a supply chamber that supplies high energy to the object material, wherein;

the thin film is disposed in the supply chamber;

when the high energy is introduced into the supply chamber through a window that exhibits transparency to the energy to irradiate the object, part of the high energy enters the object material, and another part is reflected from the object material to form reflected energy, wherein a distance between the window and the object material is more than about 20 mm; and

the supply chamber and course changing means for irradiating again the object material with the reflected energy.

56. (Five Times Amended) A method of forming a crystalline film, comprising:

forming a thin film on a glass substrate; and

crystallizing at least a surface layer of the thin film by supplying high energy through an introduction window that exhibits transparency to the energy to the thin film under a hydrogen-containing atmosphere, at least the surface layer of the thin film is melted by the high energy and crystallized by cooling solidification, and unpaired bonding electrons on a surface of the thin film during the cooling solidification are terminated by hydrogen atoms in the hydrogen-containing atmosphere, wherein:

crystallization is carried out in a high energy supply apparatus including a generation source for generating the high energy and a supply chamber for supplying the high energy to the thin film;

the thin film is set in the supply chamber;

the supply chamber has the introduction window provided in a portion of the wall of the supply chamber, for introducing the high energy into the supply chamber, wherein a distance between the introduction window and the thin film is more than about 20 mm;

when a first position of the thin film is irradiated with the high energy introduced into the supply chamber, part of the high energy enters the thin film; and another